

# **EXHIBIT A**

**U.S. Patent No. 7,414,988**

<b>Claim Language</b>	<b>Basis of Infringement Contention</b>
1. A Wi-Fi location server, comprising:	<p>Google Location Services maintains a Wi-Fi location server.</p> <p><i>See, e.g.</i>, April 27, 2010 Official Google Blog post ("Google location based services using wifi access point data work as follows . . . [t]he user's device sends a request to the Google location server with a list of MAC addresses which are currently visible to the device.") (As of February 3, 2011, the April 27, 2010 Official Google Blog post was accessible at <a href="http://www.p2pnet.net/stuff/google%20wifi.pdf">http://www.p2pnet.net/stuff/google%20wifi.pdf</a>).</p>
a database of Wi-Fi access points for at least one target area having a radius on the order of tens of miles, said database	<p>Google Location Services maintains a database of Wi-Fi access points.</p> <p><i>See, e.g.</i>, April 27, 2010 Official Google Blog post ("Google currently uses 2 pieces of the data collected during the driving operation to build its database and provide location based services – the MAC address of the access point and the GPS co-ordinates of the vehicle at the point at which the access point was visible.") (As of February 3, 2011, the April 27, 2010 Official Google Blog post was accessible at <a href="http://www.p2pnet.net/stuff/google%20wifi.pdf">http://www.p2pnet.net/stuff/google%20wifi.pdf</a>); Google Wireless Location Bug Form ("Please use this form if a Google product reported a very incorrect location . . . while your device was . . . using Google's WiFi Location database.") (As of February 3, 2011, the "Wireless Location Bug Form" was accessible at <a href="https://services.google.com/fb/forms/wifibugs/">https://services.google.com/fb/forms/wifibugs/</a>); <i>see also</i> Google Mobile Overview: Report wrong location detection (WiFi only) (as of February 3, 2011, "Google Mobile Overview: Report</p>

wrong location detection (WiFi only)" was accessible at <http://www.google.com/support/mobile/bin/answer.py?hl=en&answer=146524>).

Google Location Services' target area comprises at least a metropolitan area, which would have a radius on the order of tens of miles.

*See, e.g.*, Google Mobile Blog: Search with My Location for iPhone 3.0. And All that Jazz ("When you tap on the 'update' link, your location will be updated and displayed right there on the homepage. . . . Testing this in New York, my search for 'jazz clubs' returned a handful of places within walking distance.") (As of February 10, 2011, "Google Mobile Blog: Search with My Location for iPhone 3.0. And All that Jazz" was accessible at <http://googlemobile.blogspot.com/2009/07/search-with-my-location-for-iphone-30.html>); June 9, 2010, Letter from Google to Congress ("Google publishes a map of geographical locations where the Street View cars have driven and collected WiFi information. . . . [T]he Street View cars have driven most urban areas and major roads in the U.S. over the last three years.") (As of February 11, 2011, the June 9, 2010, Letter from Google to Congress was accessible at [http://republicans.energycommerce.house.gov/Media/file/News/060910\\_Google-Response.pdf](http://republicans.energycommerce.house.gov/Media/file/News/060910_Google-Response.pdf)); Google maps: Where is Street View available? ("Explore the map of the world to see where Street View is currently available. . . . [W]here the list specifies a particular city, this may include smaller cities and towns that are within driving distance.") (As of February 11, 2011, "Google maps: Where is Street View available?" was accessible at <http://maps.google.com/help/maps/streetview/where-is-street-view.html>).

being recorded in a computer-readable medium	A database must be stored in a computer-readable medium, such as a hard disk drive.
and including database records for substantially all Wi-Fi access points in the target area,	<p>Google Location Services collects WiFi information using at least the same vehicles which collect imagery for Google's Street View service.</p> <p><i>See, e.g.,</i> April 27, 2010 Official Google Blog post ("For the sake of ease Google uses the same vehicles which collect imagery for the Street View service to collect information about wifi access points.") (As of February 3, 2011, the April 27, 2010 Official Google Blog post was accessible at <a href="http://www.p2pnet.net/stuff/google%20wifi.pdf">http://www.p2pnet.net/stuff/google%20wifi.pdf</a>); <i>see also</i> April 27, 2010 Google European Public Policy Blog post (as of February 3, 2011, the April 27, 2010 Google European Public Policy Blog post was accessible at <a href="http://googlepolicyeurope.blogspot.com/2010/04/data-collected-by-google-cars.html">http://googlepolicyeurope.blogspot.com/2010/04/data-collected-by-google-cars.html</a>).</p> <p>Google's Street View service aims to provide a comprehensive coverage of a target area.</p> <p><i>See, e.g.,</i> Google maps Behind the Scenes ("Ultimately we'd love to drive every public road available . . .") (As of February 3, 2011, Google maps Behind the Scenes was accessible at <a href="http://maps.google.com/help/maps/streetview/behind-the-scenes.html">http://maps.google.com/help/maps/streetview/behind-the-scenes.html</a>).</p> <p>On information and belief, Google Location Services collects information for substantially all Wi-Fi access points in the target area.</p>
each record including identification information for a corresponding Wi-Fi access point and calculated position information for the corresponding Wi-Fi	Google Location Services collects identification information for Wi-Fi access points, for example, in the form of MAC addresses and corresponding GPS coordinates at the point at which the Wi-

<p>access point,</p>	<p>Fi access point was visible. Such information is used to calculate position information for the corresponding Wi-Fi access point.</p> <p><i>See, e.g.,</i> April 27, 2010 Official Google Blog post ("Google currently uses 2 pieces of the data collected during the driving operation to build its database and provide location based services – the MAC address of the access point and the GPS co-ordinates of the vehicle at the point at which the access point was visible.") (As of February 3, 2011, the April 27, 2010 Official Google Blog post was accessible at <a href="http://www.p2pnet.net/stuff/google%20wifi.pdf">http://www.p2pnet.net/stuff/google%20wifi.pdf</a>).</p>
<p>wherein said calculated position information is obtained from recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings have reference symmetry relative to other Wi-Fi access points in the target area and so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information;</p>	<p>On information and belief, the calculated position information is typically based not on a single reading of the Wi-Fi access point, but instead, on multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point (collected, for example, as the Street View vehicles drive down not only main arteries but also down side streets).</p> <p>Such multiple readings have reference symmetry relative to other Wi-Fi access points in the target area.</p> <p>Such multiple readings and the resulting reference symmetry avoid arterial bias in the calculated position information of the Wi-Fi access point.</p>
<p>and computer-implemented logic to add records to the database for newly-discovered Wi-Fi access points</p>	<p>The database for Google Location Services, which is implemented at least on a server having computer logic, adds records to the database for newly discovered Wi-Fi access points. Such Wi-Fi access points may be discovered by user-devices, for example.</p> <p><i>See, e.g.,</i> [REDACTED]</p>

	<p>[REDACTED]</p> <p>April 27, 2010 Official Google Blog post ("This information is collected in a variety of ways, including using information provided by cellphone handsets and computer applications, as well as information collected by wifi radio receivers") (As of February 3, 2011, the April 27, 2010 Official Google Blog post was accessible at <a href="http://www.p2pnet.net/stuff/google%20wifi.pdf">http://www.p2pnet.net/stuff/google%20wifi.pdf</a>).</p>
<p>said computer logic including logic to recalculate position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points.</p>	<p>Google Location Services recalculates position information for Wi-Fi access points previously stored in the database by utilizing newly-discovered readings of such Wi-Fi access points.</p> <p><i>See, e.g.,</i> [REDACTED]</p> <p>Google Mobile Overview: Report wrong location detection (WiFi only) ("We are always working to improve both coverage and accuracy over time as usage of our location-based services continues to grow.") (As of February 3, 2011, "Google Mobile Overview: Report wrong location detection (WiFi only)" was accessible at <a href="http://www.google.com/support/mobile/bin/answer.py?hl=en&amp;answer=146524">http://www.google.com/support/mobile/bin/answer.py?hl=en&amp;answer=146524</a>).</p>
<p>2. The server of claim 1 further including computer-implemented clustering logic to identify position information based on error prone GPS information.</p>	<p>On information and belief, Google Location Services' Wi-Fi location server includes computer-implemented clustering logic to identify position information based on error prone GPS information.</p> <p><i>See, e.g.,</i> April 27, 2010 Official Google Blog post ("Google</p>

	<p>currently uses 2 pieces of the data collected during the driving operation to build its database and provide location based services – the MAC address of the access point and the GPS co-ordinates of the vehicle at the point at which the access point was visible.") (As of February 3, 2011, the April 27, 2010 Official Google Blog post was accessible at <a href="http://www.p2pnet.net/stuff/google%20wifi.pdf">http://www.p2pnet.net/stuff/google%20wifi.pdf</a>): [REDACTED]</p>
<p>3. The server of claim 2 wherein the clustering logic includes logic to determine a weighted centroid position for all position information reported for an access point and logic to identify position information that exceeds a statistically based deviation threshold amount away from the centroid position and excludes such deviating position information from the database and from influencing the calculated positions of the Wi-Fi access points.</p>	<p>On information and belief, Google Location Services' Wi-Fi location server includes logic to determine a weighted centroid position for all position information reported for an access point. The server also includes logic to remove outlier data. This logic identifies position information that exceeds a statistically based deviation threshold amount away from the centroid position. Such deviating position information is excluded from the database and from influencing the calculated positions of the Wi-Fi access points.</p> <p><i>See, e.g.,</i> [REDACTED]</p> <p>[REDACTED]</p>

